Protective Equipment

Helmet Coatings for Mitigating Blast Acceleration on Helmets

A series of test panels, based on combat helmet architecture, were provided by DuPont Corporation under an ONR-funded joint cooperative research and development agreement (CRADA) with NSWC Carderock Division for developing helmet technology to mitigate blast exposure to the brain. Use of panels was a lower cost alternative to testing full-size helmet shells used in previous work. In the previous effort, two external helmet coatings, ST225 and Nanosonic's Hybridsil, were identified for mitigating injury levels. The focus of the effort using the panels was to identify alternate coatings that would indicate further improvements in lowering blast exposure. Based on levels of acceleration produced, two additional coatings with even further potential were identified, a polymer matrix containing hollow silicon carbide microspheres, designed by the NRL, and a sculpted design manufactured at the NSWC Carderock Division. Further efforts will include adding these coatings to helmets and testing their behavior with respect to blast mitigation.